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SOCIAL ATTITUDES AND BEHAVIOUR OF DOG OWNERS TO NEUTERING IN SELECTED CLINICS FROM GWAGWALADA AND ABUJA MUNICIPAL AREA COUNCILS, FCT, NIGERIA.

[1]Paschal U. Umeakuana, *[2]Donken I. Ajogi, [3]Grace E. Egwu, [2]Enid Godwin, [1]Christiana F. Ajayi, [1]Godwin O. Egwu

[1]Department of Veterinary Medicine, Faculty of Veterinary Medicine, University of Abuja, Abuja, Nigeria.
[2]Department of Public Health and Preventive Medicine, Faculty of Veterinary Medicine, University of Abuja, Abuja, Nigeria.
[3]Department of Sociology, Faculty of Social Sciences, University of Abuja, Abuja, Nigeria.

*Corresponding authors' email: donken.ajogi@uniabuja.edu.ng

ABSTRACT

Neutering is an important aspect of responsible dog ownership, contributing to population control, reduced roaming, and the prevention of behavioural and reproductive disorders. However, acceptance of the procedure varies across communities and is influenced by sociocultural and educational factors. This study assessed the knowledge, attitudes, and neutering practices of dog owners attending six private veterinary clinics in Gwagwalada and Abuja Municipal Area Councils, FCT, Nigeria, between May and November 2024. A structured questionnaire was administered to 150 respondents to obtain information on educational level, purpose of dog ownership, awareness of neutering, and willingness to undertake the procedure. Most respondents had tertiary education (113/150; 75.3%), followed by secondary (32/150; 21.3%) and primary education (5/150; 3.3%). Security was the major reason for dog ownership (86/150; 57.3%), followed by companionship (46/150; 30.7%). Vaccinated dogs accounted for 131/150 (87.3%). Awareness of neutering was reported by 115/150 (76.7%). Among male dogs, 18/82 (22.0%) had been castrated, while only 4/68 (5.9%) females were spayed. Of owners with intact dogs, 29/128 (22.7%) were willing to neuter in the future, whereas 99/128 (77.3%) were unwilling. Educational level was significantly associated with knowledge of neutering ($\chi^2 = 20.77$, df = 2, $p < 0.001$), with tertiary-educated owners more aware than others (OR = 5.35; 95% CI: 2.34–12.21). Male dogs were more likely to be castrated than females (OR = 4.50; 95% CI: 1.44–14.04; p = 0.011). Despite high awareness, neutering uptake remains low. Improved public education and veterinary-led advocacy are recommended to enhance acceptance.

Keywords: Dog Owners, Castration, Spaying, Attitude, Nigeria

INTRODUCTION

Dogs play a significant role in human society, serving as companions, sources of emotional support, and catalysts for social interaction and security against criminal tendencies. Recent studies highlight that dog ownership continues to promote community bonding, emotional resilience, and mental well-being through companionship and social engagement (Westgarth *et al*., 2021; Powell *et al*., 2023). Companion animals, particularly dogs, provide psychological benefits, including stress reduction and improved life satisfaction (Serpell, 2006). However, dog ownership also presents behavioural and welfare challenges. Behavioural problems such as aggression, anxiety, and fear are commonly associated with inadequate socialization or poor owner management (Casey *et al*., 2020). Contemporary welfare concerns also include overbreeding, obesity, and inherited disorders due to unregulated breeding (McMillan, 2019). Population control remains a vital public health and animal welfare priority, as free-roaming dogs continue to contribute to the transmission of zoonoses such as rabies (Adedeji *et al*., 2022). The World Health Organization recommends at least 70% vaccination coverage in dogs to prevent rabies outbreaks (Laager *et al*., 2018). Spaying and neutering programs are globally recognized for reducing overpopulation and improving welfare outcomes (Patronek *et al*., 2019; Konok *et al*., 2024). These procedures confer multiple benefits, including prevention of mammary tumors when performed before the first estrus, reduced aggressive or roaming behaviors, and improved longevity (Kustritz, 2012; McKenzie *et al*., 2023). Nonetheless, emerging evidence emphasizes breed- and sex-specific risks such as joint disorders or urinary incontinence when neutering occurs too early (Urfer *et al*., 2024; Hart *et al*., 2020). In Nigeria and other developing countries, limited awareness and cultural misconceptions about neutering have contributed to low uptake (Olaoye *et al*., 2021; Eze *et al*., 2022). In addition to these cultural barriers, studies on owned dogs in Nigeria have highlighted significant zoonotic and management concerns associated with dog ownership practices (Ngwamah *et al*., 2025). Understanding local attitudes toward neutering is therefore crucial for developing community-specific educational programs and veterinary advocacy initiatives that promote responsible ownership and humane population management. The present study assesses the socio-behavioural attitudes of dog owners toward castration and ovariohysterectomy (spaying) in selected private veterinary clinics in Gwagwalada and Abuja Municipal Area Councils, FCT, Nigeria.

MATERIALS AND METHODS

Ethical Approval and Informed Consent

Ethical approval for this study was obtained from the department of Veterinary medicine, University of Abuja, Nigeria. Permission to conduct the research was also granted by the management of the six participating Veterinary clinics. Informed consent was obtained from all dog owners prior to participation.

Study Area

The study was conducted in two purposively selected area councils with high dog population and abundance of vet clinics of the Federal Capital Territory (FCT), Nigeria: Gwagwalada and Abuja municipal area councils. In Gwagwalada Area Council, data were obtained through

questionnaires administered in three private veterinary clinics: Pet and vet clinic, Stacey veterinary clinic, and Kings ggrovet. In Abuja municipal area council, questionnaires were administered in Kingston veterinary clinic, Immunity veterinary clinic, and the Police veterinary clinic, with a total of 150 respondents.

Study Period
Data collection was carried out between May and November 2024 through routine visits to the selected clinics.

Study Design and Data Collection Tool
A cross-sectional study design was employed. Data were collected using a structured, close-ended questionnaire titled: Questionnaire on the socio-behavioural attitudes of dog owners toward castration and ovariohysterectomy in selected private veterinary clinics in Gwagwalada and Abuja municipal area council. The questionnaire comprised inter-alia sections on respondents' demographics, dog-related information, reasons for keeping dogs, knowledge of neutering procedures, and willingness to consider neutering in the future.

Questionnaire Administration
A total of 150 questionnaires were administered through face-to-face interviews with dog owners during clinic visits. The questionnaire was pre-tested for validity and clarity before administration. Questions were presented in simple and unambiguous language to ensure easy comprehension by respondents.

Data Evaluation
Responses were collated and evaluated based on participants' answers to the questionnaire items. Data were summarized as frequencies and percentages. Inferential statistics were done using statistical package for the social sciences (SPSS v. 25) for comparison of inherent statistical associations.

RESULTS AND DISCUSSION

Demographic Characteristics of Respondents
A total of 150 dog owners participated in the study. Most respondents (113/150; 75.3%) had tertiary education, followed by secondary education (32/150; 21.3%) and primary education (5/150; 3.3%). The highest proportion of respondents were recruited from Immunity veterinary clinic, Gwarimpa (28/150; 18.7%) and the Police veterinary clinic, Garki (28/150; 18.7%), followed by Stacey veterinary clinic, Gwagwalada (27/150; 18.0%), Kings Agroveterinary Clinic, Gwagwalada (24/150; 16.0%), Kingston veterinary clinic, Lugbe (23/150; 15.3%) and Pet and vet clinic, Gwagwalada (20/150; 13.3%) (Table 1).

Table 1: Frequency of Dog Owners Interviewed in each Veterinary Clinic

Vet. Clinics	Frequency	Percentage
Immunity clinic	28	18.7
Police vet. clinic	28	18.7
Stacey clinic	27	18.0
Kingsvet clinic	24	16.0
Kingston agrovet clinic	23	15.3
Pet and Vet clinic	20	13.3
Total	150	100

Reason for Keeping Dogs
The primary reason for dog ownership was security (86/150; 57.3%), followed by companionship ("pet-bond love") (46/150; 30.7%), children's affection (13/150; 8.7%), aesthetics (3/150; 2.0%) and hunting (2/150; 1.3%) (Table 2).

More than half of the respondents owned one dog (76/150; 50.7%), 53/150 (35.3%) owned two dogs, 13/150 (8.7%) owned three dogs, while only 8/150 (5.4%) owned four or more dogs (Table 3).

Table 2: Reason for Keeping Dogs

Reasons	Frequency	Percentage
Aesthetic	3	2.0
Children affection	13	8.7
Hunting	2	1.3
Petbond love	46	30.7
Security	86	57.3
Total	150	100

Table 3: Shows the Demography of the Number of Dogs Owned by Respondents

Number of dogs owned	Frequency (%)
1	76 (50.7%)
2	53 (35.3%)
3	13 (8.7%)
4 or more	8 (5.4%)

Characteristics of Dogs Presented
Among the dogs owned by respondents, 82/150 (54.7%) were male and 68/150 (45.3%) were female. The age distribution showed that 22/150 (14.7%) were below six months, 53/150 (35.3%) were six months to one year old, 56/150 (37.4%) were between one and three years old, 14/150 (9.4%) were between four and seven years old, and 5/150 (3.3%) were over eight years of age (Table 4).

Table 4: Shows the Age Ranges and Sex of the Dogs Sampled

Age Range	Males (n=150)	Females (n=150)
Below 6 Months	11	11
6 Months - 1 Year	28	27
1-3 Years	29	25
4-7 Years	10	4
8 Years and above	4	1
Total	82 (54.7%)	68 (45.3%)

Key: n: Total number of dogs

Knowledge of Neutering Procedures

Prior knowledge of castration and/or ovariohysterectomy was reported by 115/150 (76.7%) respondents, whereas 35/150 (23.3%) had no prior knowledge (Table 6). When asked about the definition of neutering, 54/115 (36.0%) correctly identified it as the surgical removal of testicles, 45/115 (30.0%) considered it a form of sterilization to prevent reproduction, and 16/115 (10.7%) described it as a medical procedure to remove gonads (Table 5). Among male dogs, 18/82 (22.0%) had been castrated, while 64/82 (78.0%) were intact. The main reasons for castration included population control (7/18; 38.9%), reduction of undesirable behavior such as aggression, mounting, or roaming (5/18; 27.8%), prevention of unwanted breeding (3/18; 16.7%), and health-related reasons such as prevention of certain reproductive diseases (3/18; 16.7%). Among female dogs, only 4/68 (5.9%) had been spayed, all for the purpose of preventing unwanted breeding, while 64/68 (94.1%) remained intact (Table 5).

Table 5: Respondents' Knowledge of Neutering Procedures, History of Castration /Spaying, and Reasons for Undertaking these Procedures

Management	Number Of Responses (%)
Previous knowledge of castration/spaying	
Knowledgeable	115/150 (76.7%)
Not knowledgeable	35/150 (23.3%)
Previous case of castration	
previously castrated	18/82 (22%)
Never castrated	64/82 (78%)
Previous case of spaying	
Previously spayed	4/68 (5.9%)
Never spayed	64/68 (94.1%)
Reasons for castration	
Decrease undesirable behavior	5/18 (27.8%)
Population control	7/18 (38.9%)
Breeding control	3/18 (16.7%)
Health reasons	3/18 (16.7%)
Reason for Spaying	
Prevent unwanted breeding	4/18 (5.9%)

Future Considerations for Neutering

The owners whose male dogs had not been castrated, only 14/64 (21.9%) expressed willingness to castrate in the future, while 50/64 (78.1%) were unwilling. Similarly, among owners of unspayed female dogs, 15/64 (23.4%) indicated a willingness to spay their dogs in the future, whereas 49/64 (76.6%) reported no such intention (Table 6).

Table 6: Shows future Considerations of Owners in Embarking on any of the Procedures on their Dogs

Response	Frequency of total dogs (%)	Frequency of male (%)	Frequency of female (%)
no	99 (77.3%)	50 (78.1%)	49(76.6%)
yes	29 (22.7%)	14 (21.9%)	15(23.4%)
Total	128(100%)	64 (100%)	64(100%)

Statistical Association Between Respondents' Educational Background, Sex, and Knowledge/Practices on Neutering

A total of 150 dog owners participated in the study. Most respondents had tertiary education (113/150; 75.3%), followed by secondary education (32/150; 21.3%) and primary education (5/150; 3.3%). Knowledge of neutering procedures differed significantly by education level ($\chi^2 = 20.77$, df = 2, $p < 0.001$). Specifically, 96/113 (85.0%) respondents with tertiary education were knowledgeable compared with 18/32 (56.3%) of those with secondary education and 1/5 (20.0%) of those with primary education. After combining secondary and primary levels, respondents with tertiary education had significantly higher odds of being knowledgeable about neutering than non-tertiary respondents (OR = 5.35; 95% CI: 2.34–12.21). Sex was also associated with prior neutering practices. Male respondents were significantly more likely to have neutered their dogs compared with female respondents (22.0% vs 5.9%; OR = 4.50, p = 0.011). However, no significant difference was observed between male and female respondents in their willingness to neuter dogs in the future (21.9% vs 23.4%; OR = 0.91, p = 1.000). This indicates that while education was the strongest predictor of knowledge, sex influenced past neutering behavior but not future willingness to consider the procedure (Table 7).

Table 7: Showing Statistical Association between Respondents' Educational Background, Sex, and Knowledge/Practices on Neutering

Variable	Knowledgeable (%) or Outcome (%)	Odds Ratio (95% CI)	χ^2 (df)	P-value
Education (Tertiary vs Non-tertiary)	96/113 (85)vs 19/37(44.7)	5.35 (2.34–12.21)	20.77 (2)	0.00003
Sex (Male vs Female) – Neutering Status	18/82(22.0) vs 4/68(5.9)	4.50 (1.44–14.04)	6.44 (1)	0.011
Sex (Male vs Female) – Future Willingness	21.9 (14/64) vs 23.4 (15/64)	0.91 (0.40–2.09)	0.00 (1)	1.000

Keys: CI=Confidence Interval , OR=Odds ratio, χ^2= Chisquare, df= Degrees of Freedom

Discussion

This study provides novel insight into the socio-behavioural attitudes of dog owners toward neutering in Gwagwalada and Abuja municipal area councils, FCT, Nigeria. The predominance of security threats as the primary reason for dog ownership is consistent with previous reports that dogs are widely used for protection in low- and middle-income countries due to their territorial instincts and strong human–canine bond (Suat, 2012). This finding underscores the socio-cultural role of dogs in the region, which is an important consideration for designing public health and animal welfare interventions. The observation that most respondents owned only one dog may reflect the economic burden of dog ownership, including the cost of feeding, vaccination, and veterinary care. A similar trend has been reported in other urban settings where maintenance costs limit the number of dogs per household (Jalongo & Ross, 2018). Younger dogs (under three years of age) were more frequently presented to the clinics, consistent with Karshima *et al.* (2010) in Plateau state, who reported higher morbidity rates among younger dogs due to their immature immune systems. This pattern may also reflect owners' greater attentiveness to the health of younger animals, with adult dogs often presented only when clinical illness is severe.

Education was also significantly associated with knowledge of neutering. Respondents with tertiary education were over five times more likely to be knowledgeable than those with lower education levels. This finding is consistent with reports from Nigeria and other countries that higher educational attainment enhances awareness and acceptance of veterinary health practices, including neutering (Kabir & Raheem, 2017; Eze & Obinwe, 2018). A similar association between education and responsible dog ownership has been noted in urban centers in Kenya and India, where literacy levels influence willingness to adopt preventive veterinary measures (Fielding, 2010; Singh *et al*., 2019). These findings highlight the importance and the need of targeting educationally disadvantaged groups in public sensitization campaigns.

Male dogs outnumbered females in this study, aligning with global patterns showing owner preference for males, often due to perceptions that they are more suitable for security and easier to manage reproductively (Hart & Hart, 2022). This preference has direct implications for population management, as intact males contribute significantly to uncontrolled breeding. Notably, our findings revealed a significant association between sex and neutering status, with male dogs more likely to be castrated (22.0%) compared to females (5.9%). This trend mirrors reports from other studies, such as Okonkwo *et al*. (2011) in Nsukka and Adekoya *et al*. (2015) in Ibadan, which documented higher acceptance of castration over spaying, often linked to cultural perceptions that spaying is invasive, cruel, or reduces the breeding and monetary value of female dogs. Globally, similar barriers to female neutering have been documented, particularly in low-resource settings where surgical costs and misconceptions about welfare further limit uptake (Fielding, 2010; Filipenco & Baraitareanu, 2012). A recent behavioural study further demonstrated that post-neutering changes vary by breed group, reinforcing that cultural perceptions interact with biological outcomes (Konok et al., 2024)

Although the majority of respondents (76.7%) reported prior knowledge of neutering, actual uptake was low, with only 22% of males castrated and 5.9% of females spayed. Comparable trends have been reported in Enugu, Nigeria, where only 15.4% of dogs were castrated (Kabir & Raheem, 2017), and in other developing regions where cultural beliefs, economic constraints, and limited veterinary advocacy contribute to poor uptake (Antonio, 2006; Fielding, 2010). Population control was the main reason cited for castration, in agreement with other reports from geographically distant areas that neutering remains the most effective strategy for reducing stray dog populations and mitigating rabies transmission (Silva *et al*., 2019; WHO, 2018). The extremely low spaying rate observed underscores a gender specific knowledge and acceptance gap. Spaying not only prevents unwanted pregnancies but also reduces the risk of mammary tumors by up to 90% when performed before the first estrus cycle (Salmeri *et al*., 1991; Thrusfield, 2010). Misconceptions including beliefs that spaying is cruel or diminishes the dog's value remain a major barrier (Filipenco & Baraitareanu, 2012; Schofield, 2006). The reluctance of most owners with intact dogs to consider neutering in the future further emphasizes the need for education and veterinary counseling. Some owners may focus on potential risks, such as post-surgical complications or perceived behavioral changes, while undervaluing the long-term health and welfare benefits (McGreevy *et al*., 2018). Owners also cite anxiety, weight gain, and reduced lifespan as concerns, particularly in pedigree breeds (Urfer *et al*., 2024; McKenzie *et al*., 2023).

Together, these findings suggest that education, gender perceptions, and socio-cultural values strongly shape owners' socio-behavioural attitudes toward neutering. Tailored interventions that address these barriers including one-on-one socio-behavioural discussion on pet ownership, Veterinary engagement, targeted public awareness, and subsidized neutering programs are essential for improving uptake and promoting responsible dog ownership and pet care in the FCT.

CONCLUSION

This study is the first to document the knowledge, attitudes, and practices related to dog neutering among owners attending private veterinary clinics in Gwagwalada and Abuja municipal area councils, FCT, Nigeria. Despite relatively high awareness of neutering procedures, the overall prevalence of castration and spaying was low, particularly among female dogs. Population control was the main driver of neutering decisions, while cultural perceptions, economic considerations, and limited owner education contributed to resistance against the procedure. These findings have significant implications for social security, animal welfare, public health, and dog population management strategies in Nigeria. By highlighting the gap between awareness and

practice, this study provides evidence to support targeted education programs and policy initiatives aimed at increasing understanding of neutering.

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